

CLAIMS

What is claimed is:

SUB
DI C4 1. (Amended) An isolated and/or recombinant nucleotide sequence enabling a cell cycle-dependent initiation of translation of mRNA.

2. The isolated and/or recombinant nucleotide sequence of claim 1 wherein said isolated or recombinant nucleotide sequence is an internal ribosomal entry site sequence.

3. (Previously Amended) The isolated and/or recombinant nucleotide sequence of claim 2 wherein said cell cycle dependency is a G2/M cell cycle dependency.

SUB
DI C5 4. (Amended) An isolated and/or recombinant nucleic acid molecule encoding at least a functional part of a eukaryotic internal ribosomal entry site, which said eukaryotic internal ribosomal entry site, in a mitotic PITSLRE protein kinase gene, comprises SEQ ID NO: 1 or a functional part of SEQ ID NO: 1.

5. The isolated and/or recombinant nucleic acid molecule of claim 4 wherein said eukaryotic internal ribosomal entry site is a functional part of SEQ ID NO: 1, said functional part of SEQ ID NO: 1 comprising SEQ ID NO: 7.

6. The isolated and/or recombinant nucleic acid molecule of claim 4 further comprising at least a part of SEQ ID NO: 1 or a nucleotide sequence at least substantially homologous to SEQ ID NO: 1.

C6 7. (Amended) The isolated and/or recombinant nucleic acid molecule of claim 4, wherein said isolated and/or recombinant nucleic acid molecule comprises at least a part of SEQ ID NO: 1 sufficient to encode a functional part of a eukaryotic internal ribosomal entry site, a sequence hybridizing under conventional conditions to at least a part of SEQ ID NO: 1 sufficient to encode said functional part of said eukaryotic internal ribosomal entry site, or a complementary sequence of SEQ ID NO: 1, said complementary sequence encoding said functional part of said eukaryotic internal ribosomal entry site.

8. An isolated and/or recombinant nucleic acid molecule selected from the group consisting of
a) a nucleotide sequence comprising SEQ ID NO: 4, SEQ ID NO: 5, or SEQ ID NO: 6; and
b) a nucleotide sequence consisting essentially of SEQ ID NO: 4, SEQ ID NO: 5, or SEQ ID NO: 6.

9. The isolated and/or recombinant nucleic acid molecule of claim 8 wherein said isolated and/or recombinant nucleic acid molecule comprises SEQ ID NO: 4.

10. The isolated and/or recombinant nucleic acid molecule of claim 8 wherein said isolated and/or recombinant nucleic acid molecule comprises SEQ ID NO: 5.

C7
SUB
D3 11. (Twice Amended) A chimeric gene comprising:
a) said isolated and/or recombinant nucleotide sequence of claim 3, and
b) one or more control sequences operably linked to said isolated and/or recombinant nucleotide sequence.

12. (Twice Amended) A vector comprising the isolated and/or recombinant nucleic acid sequence of claim 3.

13. The vector of claim 12 wherein said vector is an expression vector, said vector further comprising a promoter.

sub D4 C8
14. (Twice Amended) A eukaryotic host cell comprising the isolated and/or recombinant nucleic acid sequence of claim 3.

15. An expression system comprising the eukaryotic host cell of claim 14.

16. A method for cap-independent translation of mRNA in a cell, said method comprising:
introducing, into said cell, an expression vector comprising a translation control element comprising a nucleic acid sequence selected from the group consisting of SEQ ID NO: 1, SEQ ID NO: 4, and both SEQ ID NO: 1 and SEQ ID NO: 4.

sub D5 C9
17. (Twice Amended) A method of inducing a cell cycle-dependent initiation of translation in a eukaryotic cell, said method comprising introducing the isolated and/or recombinant nucleotide sequence of claim 3 into said eukaryotic cell.

18. (Amended) The method according to claim 17 wherein the isolated and/or recombinant nucleotide sequence is a cell cycle-dependent internal ribosomal entry site sequence.

19. (Amended) The method according to claim 18 wherein the cell cycle-dependent internal ribosomal entry site sequence is a G2/M-dependent internal ribosomal entry site sequence.

20. (Twice Amended) A pharmaceutical composition for treating and/or preventing a disease in a subject by gene therapy, said pharmaceutical composition comprising:

said isolated and/or recombinant nucleotide sequence of claim 3 together with means for delivering said isolated and/or recombinant nucleotide sequence to the subject.

21. (Amended) A method of treating a disease in a subject, said disease selected from the group of diseases consisting of cancer, coronary artery disease, and peripheral vascular disease, said method comprising:

administering, to the subject, in a therapeutically acceptable manner, a vector, suitable for said subject in both form and amount, and comprising an internal ribosomal entry site nucleotide sequence that enables a G2/M cell cycle-dependent initiation of translation of mRNA in the subject; and thus initiating translation of mRNA in the subject.

22. The isolated and/or recombinant nucleic acid molecule of claim 8 wherein said isolated and/or recombinant nucleic acid molecule comprises SEQ ID NO: 6.